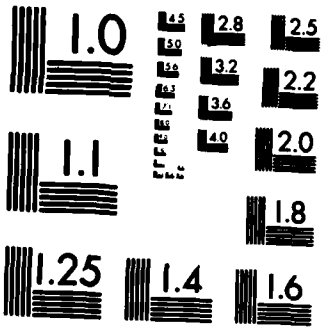
AD-A146 678 COMPUTERIZATION OF M712 155MM PROJECTILE (COPPERHEAD) 1/1
INDEPENDENT COST ES.. (U) DYNATREND INC WOBURN MA 1983
DAAK10-83-M-0024

UNCLASSIFIED F/G 19/1 NL



Contract DAAK10-83-M-0024

FINAL REPORT

COMPUTERIZATION of M712 155mm PROJECTILE (COPPERHEAD) INDEPENDENT COST ESTIMATE (ICE) and DEVELOPMENT of IN-HOUSE COST ESTIMATE MODELING CAPABILITY

prepared for

Armament Research and Development Center
U.S. Army Armament, Munitions and Chemical Command
Dover, NJ 07801

1983

prepared by

DYNATREND INCORPORATED
21 Cabot Road
Woburn, MA 01801

TABLE OF CONTENTS

LIST OF FIGURES

SECTION 1.0

GENERAL DISCUSSION

1.1 Introduction

This report concludes DYNATREND's performance of contract number DAAK10-83-M-0024 with the U.S. Army Armament, Munitions and Chemical Command's Armament Research and Development Center (ARDC). The products of this contractual effort have been a computerized M712 155mm Projectile (Copperhead) program Independent Cost Estimate (ICE) model (delivered separately), an operating personal computer system and an in-house capability to develop and use this and similar cost estimating models.

1.2 Model Development

Because of the critical timing of the Copperhead cost analysis in process review (IPR), it was agreed early in the contract to concentrate on development of the ICE model and to delay the remainder of the contract tasks until its completion. As a result, the model was constructed using the contractor's computer which was not the same as the one later purchased for the Army; however, there was considerable compatibility between the two so that updating of the model and its conversion to the new system was relatively simple to accomplish. The model was developed using a Kaypro II personal computer with the following features and supportware:

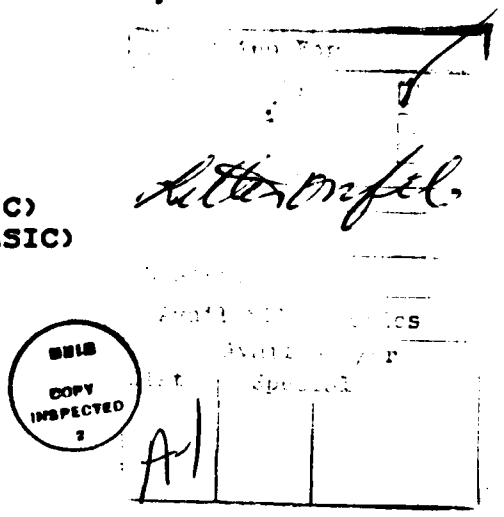
- 64K bytes random access memory, (RAM)
- transportable,
- Control Program for Microcomputers (CP/M) operating system,
- double density, single sided dual disk drives (390K bytes),
- Okidata model 93 dot matrix printer, and
- Supercalc spreadsheet software.

1.3 Computer System Selection

After completion of the Copperhead ICE model and its presentation to the IPR at Hq DARCOM, a survey of cost analysis personnel at ARDC was conducted to determine the type and characteristics of their computer system requirements. Attachment one is a copy of the interview guide used, marked with the composite scores/comments of the seven respondents. A review of over 20 candidate computers was conducted and each was rated against the weighted requirements determined as described above. In this process, cost was artificially constrained by contractual provisions (fixed at $5,000) thus eliminating some candidates such as the IBM PC XT. This constraint did not turn out to be significant however, because systems fully meeting the requirements were available within the funds allocation. As a result, cost was used as an effectiveness measure and the final two candidates, the NEC APC and the Kaypro 10, were finally differentiated on this basis.

The final selection was the Kaypro 10 with the following features and supportware:

- o 64K bytes RAM
- o transportable
- o CP/M operating system
- o 10M bytes winchester hard disk storage
- o double density, double sided floppy disk (390K bytes)
- o graphics capability
- o applications software:
  - spreadsheet
  - communications
  - word processor
  - spelling checker
  - BASIC compiler (2 each - SBASIC, CBASIC)
  - BASIC interpreter (2 each - MBASIC,OBASIC)
- o additional software:
  - Supercalc 2 spreadsheet
  - FORTRAN compiler
- o Okidata model 93 dot matrix printer
  - 160 characters per second (data mode)
  - correspondance mode
  - 10,12 and 17 characters per inch
  - dot addressable graphics



1.4 Cost Analyst Training

Upon completion of the Copperhead ICE model and the selection and acquisition of a micro-computer system, training in the form of a tutorial was provided within the DRSCM-RAC office. This training was conducted by first introducing the Kaypro 10 computer system and the basic procedures for turn-on/turn-off, hard and floppy disc management, simple CP/M functions and available software and documentation. The next step was to have the trainee read the Supercalc documentation and work through the tutorial individually and independently. After completion of this phase and the attainment of an adequate level of familiarity both with the use of the computer and the Supercalc applications software, the Copperhead model was introduced and simple manipulations were presented to the trainee for his exercise and proficiency development (see Section 2 for a complete description of the model and its development). Further assistance will be provided by telephonic on-call trouble shooting as the equipment and technique are applied to other in-house applications.

Supercalc and Supercalc 2 are registered trademarks of Sorcim Corp.
CP/M is a registered trademark of Digital Research, Inc.

SECTION 2.0

COPPERHEAD ICE

2.1 Model Development

In order to understand the text that follows, a familiarity with Supercalc spreadsheet capabilities is necessary. Some fundamental information is provided here and is specific to Supercalc but is also to a great extent applicable to any other of the more sophisticated spreadsheets currently on the market. Please note that references to Supercalc and Supercalc 2 are interchangeable in this section as no effort has been made to separate their features and capabilities. The spreadsheet is a matrix made up of 16,002 cells, 63 columns addressable as A thru BK and 254 rows addressable as 1 thru 254. The upper left cell then is identified as A1 and the lower right cell is BK254. Column widths can vary from 0 to 127 characters, therefore a matrix can be developed to fit any format desired. Zero width columns can be used for data or intermediate calculations needed in the matrix but that the user does not want to be displayed. One character width columns can be used with vertical slashes (|) to form vertical lines and dashes (-) can be used for horizontal lines so that a completely boxed matrix can be formed if desired. A cell can have either text or quantities so that nearly unlimited formatting is possible, e.g., text and calculations can be intermixed in the body of a report or spreadsheet without having to use a word processor.

In the development of the Copperhead ICE model, the first step was to construct formats for each of the three forms used in the ICE (variable explanation, computation, and cost data sheets). Because of their similarities, it was found that a basic variable explanation sheet format was all that was required. Minor changes could then be made to adapt that format to the other two applications. Therefore, a master spreadsheet (VARBLNK) was formed with six blank variable explanation sheet formats (see Figure 2.1 for example). The next step was to determine a logical breakdown of the ICE (it obviously wouldn't all fit on a single spreadsheet). A combination of the DA Pamphlet 11-4 cost elements and the Copperhead work breakdown structure was used, i.e. 2.02,1, 2.02,2, 2.02,3, 2.02,4, 2.02,5, 2.04,5, 2.06,5, 2.10,5, thereby providing easy continuity with the output product.

The first spreadsheet created was for production of the Projectile - 2.02,1 (CH202-1). There were a total of twelve sheets required for this element, therefore it was necessary to copy the blank format in six additional locations as indicated below (this is a simple process). Next, each sheet was modified as necessary and information was filled in from the draft ICE. This step involved changing the title and changing or eliminating some of the subheadings where the desired sheet was not for variable explanation, and then entering the text and formulas applicable to that sheet. It was necessary during this latter process to do

CELL NO. _____

VARIABLE IDENT. _____

VARIABLE EXPLANATION
(ARRADCOM Pam 37-2)

ITEM:

CURRENT VALUE BEING USED:

DESCRIPTION OF HOW VALUE DERIVED:

ASSUMPTIONS:

SOURCE

PAGE ____ OF ____

FIGURE 2.1 VARIABLE EXPLANATION SHEET FORMAT

a considerable amount of adjusting of cells, column widths and line spacing in order to get a desirable appearance. The technique for doing this is acquired through practice and experience and although tedious at first, can be done swiftly and easily after a while. A separate area of the spreadsheet was selected for data input so that all data would be together and easily accessible when it became necessary to change it. Likewise, all computed values were written to a separate area for easy accessibility to other spreadsheets and the summary matrix (see Figure 2.2 for example). A description (file locator) of the above described spreadsheet (CH202-1) is contained in Section 2.2.

Through experience, a very efficient technique of completing each spreadsheet was learned. First of all, for minimum computations, it is best to have input variables taken from the "input variables" table each time they are used, rather than taking them from other sheets. For the same reason, it is best to form the spreadsheet so that it builds to the right and down (forward). In both cases, the number of computation iterations is reduced saving a considerable amount of processing time. To reiterate the process of developing a spreadsheet, the following steps are involved:

a. Determine the number of individual sheets required.

b. Set up that number of master formats making a rectangle in the upper left extreme of the spreadsheet.

c. Set aside an area for input variables separate from the sheets. This area should be isolated enough so that it can be transferred from one spreadsheet to another without interfering with other parts of either spreadsheet.

d. Input variables to the "input variables" table

e. Select the lowest order variable explanation sheet and input it in the upper left hand format.

f. Build each sheet to the right and down, going from variable explanation sheets to computation sheets and finally to the cost data sheet.

g. Set up a parallel table to the one created for input variables, for calculated variables and write the results of each sheet's calculations to this table. The same location criteria as for the "input variables" table applies to this table.

To create subsequent spreadsheets, the same procedure was followed. In each case, the input variables were loaded from the previous spreadsheet and additional variables were added as they were needed for the particular spreadsheet. As an example, the LAP production cost section - 2.02,2 (CH202-2) was created following the procedures outlined above for 2.02,1 and the information required from that sheet was brought forward as follows:

	B		D	F	G	H	I	O	P	Q	R	S
125		INPUT VARIABLES							CALCULATED VARIABLES			
126												
127	189838.8	K FY81$	Total Buy 2					46.483	K FY84$	Buy 2		
128	.9285		FY81 to FY82 Infl Divisor					-.281		B2		
129	1.873		BY82 Comp Index					1778	Units	QTY(FY84)		
130	1.1857		FY82 to FY84 Const Index					2252	"	QTY(FY85)		
131	2524	Units	Buy 2 Quantity					2452	"	QTY(FY86)		
132	.87		Prod Rate Exp Factor					2743	"	QTY(FY87)		
133	1778	Units	FY84 Buy					3548	"	QTY(FY88)		
134	2252	"	FY85 Buy					3412	"	QTY(FY89)		
135	2452	"	FY86 Buy					3638	"	QTY(FY90)		
136	2743	"	FY87 Buy					2552	"	QTY(FY91)		
137	3548	"	FY88 Buy					-.1283		B1		
138	3412	"	FY89 Buy					12752	K FY84$	LL94C		
139	3638	"	FY90 Buy					3888	K FY84$	T91		
140	2552	"	FY91 Buy					8557	Units	X(FY84)		
141	.92		LC Exp					18532	"	X(FY85)		
142	15188	K FY83$	Total FY83 - Infl					12948	"	X(FY86)		
143	2188	K FY82$	FY83 Buy - Infl					15536	"	X(FY87)		
144	1.8725		BY83, FY83 Comp Index					18573	"	X(FY88)		
145	1.853		BY83, FY84 Comp Index					22168	"	X(FY89)		
146	3888	K FY84$	FY91 Termination Cost					25567	"	X(FY90)		
147	1.869		FY84 Ramo Comp Ind					28885	"	X(FY91)		
148	1.1148		FY85 "					572.514	K FY84$	A		
149	1.1533		FY86 "					76888	"	FY84 Total 2.82,1 Cost		
150	1.2178		FY87 "					89924	"	FY85 "		
151	1.2726		FY88 "					93698	"	FY86 "		
152	1.3299		FY89 "					108191	"	FY87 "		
153	1.3897		FY90 "					128338	"	FY88 "		
154	1.4522		FY91 "					114254	"	FY89 "		
155								117144	"	FY90 "		
156								98555	"	FY91 "		
157								882886	"	SUM "		
158								63336	"	FY84 Net 2.82,1 Cost		
159								93555	"	FY91 "		
160								792334	K FY84$	Total "		
161								67786	K $	FY84 Infl "		
162								108247	"	FY85 "		
163								103872	"	FY86 "		
164								122813	"	FY87 "		
165								153132	"	FY88 "		
166								151946	"	FY89 "		
167								162795	"	FY90 "		
168								135861	"	FY91 "		
169								1882772	"	Total "		

FIGURE 2.2 INPUT/CALCULATED VARIABLES FILE (C1282-1)

a. Load input variables from 2.02,1 and place in the same location in 2.02,2 - load CH202-1 from B125:L154 to B125.

b. Load calculated variables (values) from 2.02,1 and place in the same location in 2.02,2 - load CH202-1 from O125:S169 to O125.

c. Load variable QTYi (values) from 2.02,1 and place in location S1 of 2.02,2 - load CH2.02-1 from W1:AG62 to S1.

* Adjust column widths - U=6, V=3, X=6, Y=3

* Change text in cell number AG3 from "2.02,1" to "2.02,2".

Once the cost data sheets and their backup calculations were completed, summary cost tables for both Constant FY84 dollars and for inflated dollars were constructed. This was accomplished by formatting two replicas of the DA Pamphlet 11 series format for cost summaries on a new spreadsheet (CHSUM) and then loading the output variables table onto the same spreadsheet. To complete the task, the various cells within the summaries were referenced to the appropriate values in the calculated variables table (constant or inflated dollars as appropriate) and then the columns and rows were summed (see Section 2.2 for a file description of CHSUM). An exactly similar process was followed in the development of the time phased life cycle cost (LCC) tables. A new spreadsheet (CHSPREAD) was constructed (see Section 2.2 for a file description of CHSPREAD).

2.2 Model Description

Each spreadsheet followed this pattern until the final cell (2.10,5) cost data sheet had been completed. The following secton contains a description of each cell structure (file locations) and the procedure for bringing data forward from the preceding spreadsheet. It should be remembered that each one of these files was created by starting with blank formats (VARBLNK) which had the additional effect of setting standard column widths. This section also includes descriptions of the cost summary and time phased LCC spreadsheets.

2.2.1 File CH202-1 (Cell 2.02,1)

Contents	Name	Location
Variable Explanation Sheet	Buy 2	A1:L62
Variable Explanation Sheet	B2	M1:V62
Variable Explanation Sheet	QTYi	W1:AG62
Variable Explanation Sheet	LL84C	A63:L124
Variable Explanation Sheet	B1	M63:V124
Variable Explanation Sheet	T91	W63:AG124
Variable Explanation Sheet	Xi	AH1:AT62
Variable Explanation Sheet	A	AU1:BG62
Computation Sheet	A	AH63:AT124

Computation Sheet - Constant $	2.02,1	AU63:BG124
Cost Data Sheet	2.02,1	AU125:BG186
Computation Sheet - Inflated $	2.02,1	AU187:BG248
Input Variables		B127:B154
Calculated Variables		O127:O169

2.2.2 File CH202-2 (Cell 2.02,2)

Contents	Name	Location
Variable Explanation Sheet	LAP	A1:I62
Cost Data Sheet	2.02,2	J1:R62
Computation Sheet - Inflated $	LAP	J63:R124
Variable Explanation Sheet	QTYi	S1:AC62
Computation Sheet - Constant $	LAP	S63:AC124
Input Variables		A125:H155
Calculated Variables		O125:S188

Procedure

1. Load CH202-1.DAT A125:L154 to A125 - Input Variables File
2. Load CH202-1.DAT (V)alue O125:S169 to O125 - Calculated Variables File

3. Load CH202-1.DAT (V)alue W1:AG62 to S1 - QTYi File

   Set columns S T U V W X Y Z AA AB SC
   9 9 6 3 9 6 3 8 9 9 9

   AT AC4, change Cell No. to "2.02,2"

2.2.3 File CH202-3 (Cell 2.02,3)

Contents	Name	Location
Variable Explanation Sheet	Container	A1:I62
Computation Sheet - Constant $	2.02,3	J1:R62
Variable Explanation Sheet	QTYi	S1:AC62
Computation Sheet - Inflated $	2.02,3	j63:R124
Cost Data Sheet	2.02,3	A63:I124
Input Variables		A125:H156
Calculated Variables		O125:S207

Procedure

1. Load CH202-2 A125:H155 to A125 - Input Variables File
2. Load CH202-2 (V)alue O125:S188 to O125 - Calculated Variables File
3. Load CH202-1.DAT (V)alue W1:AG62 to S1 - QTYi File

   Set columns S T U V W X Y Z AA AB AC
   9 9 6 3 9 6 3 8 9 9 9

   At AC4, change Cell No. to "2.02,3"

2.2.4 File CH202-4 (Cell 2.02,4)

Contents	Name	Location
Variable Explanation Sheet	PSEF	A1:I62
Computation Sheet - Constant $	2.02,4	J1:R62
Computation Sheet - Inflated $	2.02,4	J63:R124
Cost Data Sheet	2.02,4	A63:I124
Input Variables		A125:H157
Calculated Variables		O125:S225

Procedure

1. Load CH202-3 A125:H156 to A125 - Input Variables File
2. Load CH202-3 (V)alue O125:S207 to O125 - Calculated Variables File

2.2.5 File CH202-5 (Cell 2.02,5)

Contents	Name	Location
Variable Explanation Sheet	TG91	A1:I62
Cost Data Sheet	2.02,5	J1:R62
Input Variables		A125:H158
Calculated Variables		O125:S227

Procedure

1. Load CH202-4 A125:H157 to A125 - Input Variables File
2. Load CH202-4 (V)alue O125:S225 to O125 - Calculated Variables File

2.2.6 File CH204-5 (Cell 2.04,5)

Contents	Name	Location
Variable Explanation Sheet	QTi	A1:I62
Variable Explanation Sheet	CF5	A63:I124
Computation Sheet - Constant $	2.04,5	J1:R62
Computation Sheet - Inflated $	2.04,5	J63:R124
Cost Data Sheet	2.04,5	S1:AA62
Input Variables		A125:H166
Calculated Variables		O125:W227

Procedure

1. Load CH202-5 A125:H158 to A125 - Input Variables File
2. Load CH202-5 (V)alue O125:S227 to O125 - Calculated Variables File

2.2.7 File CH206-5 (Cell 2.06,5)

Contents	Name	Location
Variable Explanation Sheet	CPMYPM	A1:I62
Variable Explanation Sheet	NMYPM	A63:I124
Computation Sheet - Cons/Infl $	2.06,5	J1:R62
Cost Data Sheet	2.06,5	S1:AA62
Input Variables		A125:H172
Calculated Variables		O125:W227

Procedure

1. Load CH204-5 A125:H166 to A125 - Input Variables File
2. Load CH204-5 (V)alue O125:W227 to O125 - Calculated Variables File

2.2.8 File CH210-5 (Cell 2.10,5)

Contents	Name	Location
Variable Explanation Sheet	SDEP	A1:I62
Variable Explanation Sheet	SLAT	A63:I124
Variable Explanation Sheet	SLAP	J1:R62
Variable Explanation Sheet	QTi	J63:R124
Variable Explanation Sheet	QTYi	S1:AC62
Variable Explanation Sheet	QTDi	S63:AM124
Computation Sheet	Trans/DEP	AD1:AM62
Computation Sheet	Trans/LAT	AD63:AM124
Computation Sheet	Trans/LAP	AD125:AM186
Input Variables		A125:H176
Calculated Variables		O125:W227

Procedure

1. Load CH206-5 A125:H172 to A125 - Input Variables File
2. Load CH206-5 (V)alue O125:W227 to O125 - Calculated Variables File
3. Load CH204-5 (V)alue A1:I62 to J63 - QTi

   At R66, change Cell No. to "2.10,5"

4. Load CH202-3 (V)alue S1:AC62 to S1 - QTYi

   Set columns S T U V W X Y Z AA AB AC
   9 9 6 3 9 6 3 8 9 9 9

   AT AC3, change Cell No. to "2.10,5"

2.2.9 File CH210-5A (Cell 2.10,5 Continued)

Contents	Name	Location
Computation Sheet - Cons/Infl $	2.10,5	A1:I62
Cost Data Sheet	2.10,5	J1:R62
Input Variables		A125:H185
Calculated Variables		O125:W227

Procedure

1. Load CH210-5.DAT A125:h176 to A125 - Input Variables File
2. Load CH210-5.DAT (V)alue O125:W227 to O125 - Calculated Variable File

2.2.10 File CHSUM (Cost Summary Tables)

Contents	Name	Location
LCC Matrix - Constant $	Total System	C4:U59
LCC Matrix - Inflated $	Total System	C60:U115
Calculated Variables		A1:B101

Procedure

1. Load CH210-5A (V)alue O127:O227 to A1 - Calculated var-
2. Load CH210-5A (V)alue S127:S218 to B1 - iables file

2.2.11 File CHSPREAD (Time Phased LCC Tables)

Contents	Name	Location
Annual Cost Spread - constant $	Total System	V15:AU54
Annual Cost Spread - Inflated $	Total System	V55:AU94
Calculated Variables		A1:B101

Procedure

1. Load CHSUM (V)alue A1:B101 to A1 - Calculated Variables File

2.3 E(X)ecute File

A program is required to tie all of the spreadsheets together and run the entire model after data input. Supercalc has a function named e(X)ecute which operates from a program file of commands the same way that it normally responds to a user's keystrokes. By stringing a series of keystrokes, an e(X)ecute program file can be developed. Complete instructions for this procedure are contained in the Supercalc instruction booklet.

This section contains a listing of the program file called DEMOEX.SC which was developed to run the Copperhead model. Some descriptive narrative has been added to facilitate understanding.

DEMOEX.SC_File	Explanation
/zy/lb:ch202-1.dat	/,(Z)ap,(Y)es,(L)oad file B:CH202-1,[CR]
a!/sb:ch202-1.dat	(A)ll,(!)calculate,/,(S)ave,B:CH202-1,[CR]
opaa1:bg248	(O)verwrite,(P)art,(A)ll,A1:BG248,[CR]
/zy/lb:ch202-2	/(Z)ap,(Y)es,/,(L)oad file B:CH202-2,[CR]
a/lb:ch202-1.dat	(A)ll,/(L)oad file B:CH202-1,[CR]
pb125:s169	(P)art from B125:S169[CR] to
b125,v/lb:ch202-1.dat	B125,(V)alue,/,(L)oad file B:CH202-1,[CR]
pw1:ag62	(P)art from W1:AG62,[CR]
s1,v=ac4	to S1,(V)alue, (=)go to AC4[CR]
"2.02,2(1)	(")enter text 2.02,1(1)[CR]
=a1	(=)go to A1,[CR]
!/sb:ch202-2	(!)calculate,/,(S)ave,B:CH202-2,[CR]
opaa1:ac188	(O)verwrite,(P)art,(A)ll,A1:AC188,[CR]
/zy/lb:ch202-3	M
a/lb:ch202-2	
pb125:s188	
b125,v/lb:ch202-1.dat	O
pw1:ag62	
s1,v=ac3	
"2.02,3(1)	R
=a1	
!/sb:ch202-3	
opaa1:ac207	E
/zy/lb:ch202-4	
a/lb:ch202-3	
pa125:s207	
a125,v!/sb:ch202-4	O
opaa1:s225	
/zy/lb:ch202-5	
a/lb:ch202-4	F
pa125:s225	
a125,v!/sb:ch202-5	
opaa1:s227	
/zy/lb:ch204-5	T
a/lb:ch202-5	
pa125:s227	
a125,v!/sb:ch204-5	H
opaa1:aa227	
/zy/lb:ch206-5	
a/lb:ch204-5	E
pa125:w227	
a125,v!/sb:ch206-5	
opaa1:aa227	
/zy/lb:ch210-5.dat	S
a/lb:ch206-5	
pa125:w227	
a125,v/lb:ch204-5	A
pa1:i62	
j63,v/lb:ch202-3	
pa1:ac62	M
a1,v=r66	
"2.10,5(2)	
=ac3	E

DEMOEX.SC (Continued)

```
"2.10,5(2)
=a1
!/sb:ch210-5.dat                    S
opaa1:am227
/zy/lb:ch210-5a
a/lb:ch210-5.dat                      A
pa125:w227
a125,v!/sb:ch210-5a
opaa1:w227                              M
/zy/lb:chsum
a/lb:ch210-5a
po127:o227                                E
a1,v/lb:ch210-5a
pa127:s218
b1,v!/sb:chsum
opaa1:u115          (O)verwrite,(P)art,(A)ll,A1:V15,[CR]
/gb/odc4:u59        /,(G)lobal,(B)order,/(O)utput,(D)isplay,
sw200                  C4:U59,[CR]   (S)elect,(W)idth,200[CR]
l64                 (L)ength,64,[CR]
p                   (P)rinter
/odc60:u115         /,(O)utput,(D)isplay,C60:V115,[CR]
p                   (P)rinter
/zy                 (Z)ap,(Y)es
```

2.4 Model Operation

This section describes the operation of the Copperhead ICE model. Although in this case the instructions are for a specific model, the same general process will be followed for any models that are developed using the methodology described in this report. Simply stated, the procedure is to call up the spreadsheet that first uses the factor under consideration then go to the input variables file area within that spreadsheet (reference the appropriate file locator in Section 2.2) and change whatever data element(s) that is desired. Upon completion, save the revised spreadsheet. The next step is to call up the e(X)ecute program and let it recalculate the model and print out the constant dollar and inflated dollar cost summary matrices. For printouts of the other sheets a separate procedure (described below) must be followed.

2.4.1 Model Recalculation

The following instructions describe the steps to follow to change the first year buy quantity from 1778 to 2520 units. It should be obvious from this example that any one (or more) of the many variables could be changed using the same procedures (several times if desired for sensitivity analysis). The actual keystroke inputs for each step are followed by a plain language explanation.

Keystrokes	Explanation
^p[CR]	Control P - Bring printer online
^][CR]	Control] - Set printer to 17 cpi
sc(or sc2)[CR][CR]	Load Supercalc
/lb:ch202-1,dat[CR]a	Load file CH202-1.DAT
=a125[CR]	Go to cell A125
	Move cursor to cell B133
2520[CR]	Type in 2520
/sb:ch202-1.dat[CR]	Save entire spreadsheet
opaA1:BG248[CR]	
/xdemoex.sc[CR]	Execute DEMOEX.SC program
	Reset printer for top of next page
d	Hit any key (required between printing of the constant and inflated cost summary matrices after resetting printer

2.4.2 Printouts

To print out a particular variable explanation, computation or cost data sheet, or either of the time phased LCC or the cost summary tables, it is only necessary to call up the particular spreadsheet that contains the item of interest and then use the output function for that item's coordinates as contained in the appropriate file locator in Section 2.2 of this report. There are two exceptions to these instructions which will be explained after the following example.

Example: Printout Time Phased LCC Tables

	Prepare printer as in 2.4.1, above
/lb:chspread[CR]a	Load B:CHSPREAD, all
/odv15:au54[CR]	Output constant dollar matrix
sw255[CR]164[CR]p	with width of 255 and length of 64
d	Hit any key
/odv55:au94p	Output inflated dollar matrix

When transferring the model from the Kaypro II to the Kaypro 10 computer, certain minor changes were required to accommodate the slightly smaller (4K bytes) useable RAM on the latter computer which is the resule of the additional overhead requirements for graphics management. In developing the model, two spreadsheets (CH202-1, CH210-5) used the maximum available RAM and therefore did not fit when moved to the Kaypro 10. To work around this problem, a certain portion of the text was moved to another file with a name extension of .TXT (CH202-1.TXT, CH210-5.TXT) and the original spreadsheet was given the name extension of .DAT in lieu of the default extension of .CAL (CH202-1.DAT, CH210-5.DAT). It should be noted that the program DEMOEX.SC deals exclusively with the .DAT files for these two spreadsheets. In addition, it is necessary to recognize that the file locators contained in Section 2.2 are based on the assumption of combined files (i.e., not divided).

The following instructions pertain to the printing of the top line of sheets from the CH202-1 and CH210-5 spreadsheets only. Specifically the following sheets are affected:

- CH202-1 - Variable explanation sheets Buy 2, B2, QTYi, Xi
- CH210-5 - Variable explanation sheets SDEP, SLAP, QTYi
  Computation sheet Trans/DEP

To print out any of the above sheets in CH202-1, load CH202-1.DAT from A1:BG62 to A1 then load CH202-1.TXT from A1:BG62 to A1. This will overlay the text and format onto the values and provide complete sheets ready for output. All other sheets on CH202-1 can be directly output from CH202-1.DAT. The exact same procedure applies for the above sheets in CH210-5, that is overlay CH210-5.TXT (A1:AM62) onto CH210-5.DAT (A1:AM62) and output. Again, all other sheets can be output directly from CH210-5.DAT.

ARDC/DRSMC-RAC COMPUTER SYSTEM - INTERVIEW GUIDE

Name: _____ **Date:** _____

Discussion

1. Computer familierization/experience?

2. Area of responsibility?

3. Hands-on work involvement (cost estimating, validating, analyzing, reviewing, supervision, etc.)?

4. Potential uses of micro-computer system? Modeling, economic analysis, routine programs, word processing, administrative - workloading, time accounting, budgeting, etc., data bases, cost estimating relationships (CERs), risk/sensitivity analyses, performance appraisals.

Weighted Importance of System Characteristics/Capabilities

Feature	Importance (0 - 5)
Hardware:	
Transportibility	2.33
Speed	2.5
Graphics	3.5
Color	2.33
Memory Size	4.0
Standard Interfaces	4.0
Communications with Main Frame	4.17
Communications with Like Computers	4.33
Expandability	3.0

Removable Keyboard	1.5
Dual Disk Drives	3.75
Local Area Networking (LAN) Capability	2.67
Screen Size (minimum 9")	4.5
Numeric Keypad	0.75
Letter Quality Printing (Daisey Wheel)	2.4
Correspondance Mode Printing (Dot Matrix)	3.25
Printing Speed	2.75
Changeable Characters Per Inch (CPI) Printing	3.0
Wide Carriage	4.0

Software:

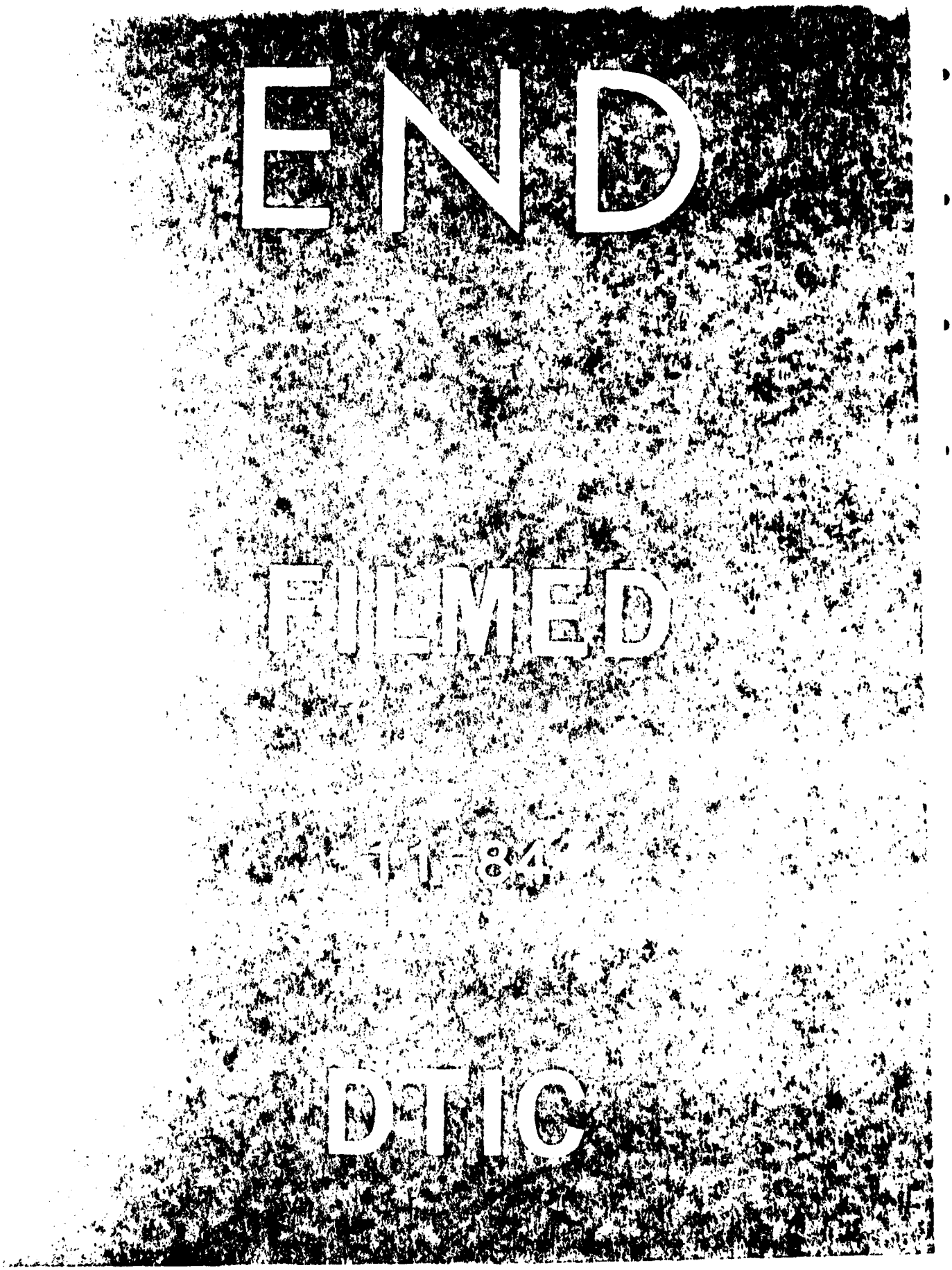
Standard Operating System (CP/M, MS-DOS)	4.25
Spreadsheet	4.5
Word Processor	4.0
Data Base Management System	4.0
Basic Interpreter	2.5
Basic Compiler	2.5
Fortran Compiler	4.5
Other Compilers	0

Comments

Other desired software included an editor, linear programming and a statistical package with the following capabilities: tests (F, T, Durbin-Watson), confidence intervals (Standard T), goodness of fit, regression, analysis of variance, time series analysis.

Self contained system, particularly user friendly, good documentation, readily available supplies (discs, paper, etc.), minimum disc swapping.

Plot printer.


END
FILMED
11-84
DTIC